

IN THE CLAIMS

1. (Withdrawn) A cleaning solution for removing a polymer comprising:
about 1 to about 10 percent by weight of sulfuric acid;
about 0.5 to about 5 percent by weight of aqueous hydrogen peroxide solution; and
about 85 to about 98.5 percent by weight of hydrogen fluoric acid solution.
2. (Withdrawn) The cleaning solution of claim 1, wherein the hydrogen fluoric acid solution includes about 1,000ml of deionized water and about 0.1 to about 2 ml of hydrogen fluoric acid, wherein the hydrogen fluoric acid has a concentration of about 45 to about 55 percent.
3. (Currently Amended) A method of cleaning a semiconductor device comprising:
removing polymers attached to a metal wiring formed on a substrate by immersing the substrate in preparing a cleaning solution including about 1 to about 10 percent by weight of sulfuric acid, about 0.5 to about 5 percent by weight of an aqueous hydrogen peroxide solution, and about 85 to about 98.5 percent by weight 0.01% to about 0.11% of a hydrogen fluoric hydrofluoric acid solution;
~~removing polymers attached to a metal wiring formed on a substrate by immersing the substrate in the cleaning solution;~~
rinsing the substrate to remove the remaining cleaning solution; and
drying the substrate.
4. (Canceled)
5. (Currently amended) The method of claim 3, wherein ~~preparing the cleaning solution~~ removing polymers further comprises raising a temperature of the cleaning solution to a temperature of about 20 to about 30°C.
6. (Original) The method of claim 5, wherein immersing the substrate in the cleaning solution comprises immersing the substrate in the cleaning solution for about 1 to about 9 minutes.

7. (Original) The method of claim 3, wherein the metal wiring corresponds to a gate electrode that includes tungsten or a bit line that includes tungsten.

8. (Original) The method of claim 3, wherein the polymers comprise one selected from the group consisting of organic polymers, metallic polymers, and oxygen-containing polymers.

9-13. (Canceled)

14. (New) A method of cleaning a semiconductor device, comprising:
removing polymers attached to a metal wiring formed on a substrate by immersing the substrate in a cleaning solution, said cleaning solution including:

about 1 to about 10 percent by weight of sulfuric acid,

about 0.5 to about 5 percent by weight of an aqueous hydrogen peroxide solution, and

about 100 ppm to about 1080 ppm hydrofluoric acid;

rinsing the substrate to remove the cleaning solution; and

drying the substrate.

15. (New) The method of claim 14 wherein immersing the substrate in the cleaning solution comprises raising a temperature of the cleaning solution to a temperature of about 20 to about 30°C.

16. (New) The method of claim 14 wherein immersing the substrate in the cleaning solution comprises immersing the substrate in the cleaning solution for about 1 to about 9 minutes.

17. (New) The method of claim 14 wherein the metal wiring corresponds to a gate electrode that includes tungsten or a bit line that includes tungsten.

18. (New) The method of claim 14 wherein the polymers are selected from the group consisting of organic polymers, metallic polymers, and oxygen-containing polymers.

19. (New) A method of forming a structure for a semiconductor device, comprising:
- dry etching a polysilicon film, a tungsten film, and a nitride film that are successively disposed on a substrate using a mask pattern formed on the nitride film;
 - removing the mask pattern;
 - removing polymers attached to a sidewall of the structure by immersing the substrate in a cleaning solution, wherein the cleaning solution comprises about 1 to about 10 percent by weight of sulfuric acid, about 0.5 to about 5 percent by weight of aqueous hydrogen peroxide solution, and about 100 ppm to about 1100 ppm of hydrofluoric acid;
 - rinsing the substrate to remove cleaning solution remaining on the substrate; and
 - drying the substrate.
20. (New) The method of claim 19, further comprising depositing a barrier layer between the polysilicon film and the tungsten film.
21. (New) The method of claim 19 wherein the structure includes a gate electrode or a bit line.
22. (New) The method of claim 19 wherein immersing the substrate in a cleaning solution comprises immersing the substrate in a cleaning solution with a temperature of about 20 to about 30°C.
23. (New) The method of claim 22 wherein immersing the substrate in a cleaning solution further comprises immersing the substrate in a cleaning solution for about 1 to about 9 minutes.